

ABSTRACT

The patterns of contraction and relaxation of the heart before and during left ventricular or biventricular pacing are analyzed and displayed in real time mode to assist physicians to screen patients for cardiac resynchronization therapy, to set the optimal A-V or right ventricle to left ventricle interval delay, and to select the site(s) of pacing that result in optimal cardiac performance. The system includes an accelerometer sensor; a programmable pace maker, a computer data analysis module, and may also include a 2D and 3D visual graphic display of analytic results, i.e. a Ventricular Contraction Map. A feedback network provides direction for optimal pacing leads placement. The method includes selecting a location to place the leads of a cardiac pacing device, collecting seismocardiographic (SCG) data corresponding to heart motion during paced beats of a patient's heart, determining hemodynamic and electrophysiological parameters based on the SCG data, repeating the preceding steps for another lead placement location, and selecting a lead placement location that provides the best cardiac performance by comparing the calculated hemodynamic and electrophysiological parameters for each different lead placement location.